

## REMARKS

In response to the Office Action dated February 6, 2009, Applicants respectfully request reconsideration based on the above claim amendments and the following remarks. Applicants respectfully submit that the claims as presented are in condition for allowance.

Claims 1-14 and 23-29 are pending in the present Application. Claims 1, 2, 10, 11, 14 and 23 are amended, leaving Claims 1-14 and 23-29 for consideration upon entry of the present amendments and following remarks.

Support for the claim amendments can at least be found in the specification, the figures, and the claims as originally filed. Particularly, support for amended independent Claims 1, 10 and 23 is at least found in originally filed Figures 3 and 4, and in the specification at page 9, lines 14-16. Support for amended Claims 2 and 11 is at least found in originally filed Figure 15B and originally filed Claims 1 and 10. Claim 14 is amended to depend from Claim 12.

No new matter has been introduced by these amendments. Reconsideration and allowance of the claims are respectfully requested in view of the above amendments and the following remarks.

### **Claim Rejections Under 35 U.S.C. §112**

Claims 2 and 11 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement, as the claims allegedly contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Particularly, the limitation of “the first insulation layer *electrically* couples with the second portion of the first electrode” is not disclosed in the specification, and such a way, one skilled in the art would not be able to connect with the invention.

Claims 2 and 11 are further rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Particularly, it is stated as not being clear how the first insulation layer can be *electrically coupled* with the second portion of the first electrode.

In response, Applicants hereinabove amend Claims 2 and 11 to recite “the *second transparent electrode* electrically coupled with the second portion of the first electrode,” as

supported in at least originally filed Figure 15B and Claims 1 and 10, from which Claims 2 and 11 respectively depend.

Applicants respectfully submit that amended Claims 2 and 11 contain subject matter which is described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention, and particularly point out and distinctly claim the subject matter which applicant regards as the invention, in compliance with the requirements of 35 U.S.C. 112, first and second paragraphs. Entry of the claim amendments, reconsideration, withdrawal of the relevant claim rejections and allowance of Claims 2 and 11 are respectfully requested.

**Claim Rejections Under 35 U.S.C. §103**

Claims 1, 3-10, 12-14 and 23-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim, et al., International Publication WO 01/45283 A1 (hereinafter “Kim”) in view of Kikkawa et al., U.S. Patent No. 6,879,359 (hereinafter “Kikkawa”). Applicants respectfully traverse the rejections for the reasons set forth below.

Regarding Claims 3, 4, 23 and 24, responsively, Applicants respectfully submit that the rejection details fail to point out with specificity what features in the cited references are being cited as corresponding to or teaching the “unit cells,” the “pixel,” and the claimed aspect ratios as claimed. As such, Applicants have not been fully informed as to how the cited references teach the claimed invention, as required. Moreover, without further information, Applicants have not been given an opportunity to rebut the allegations and conclusions in the instant Office action.

Regarding Claims 7, 8, 13, 14, 27 and 28, responsively, Applicants respectfully submit that the rejection details fail to point out with specificity what features in the cited references are being cited as corresponding to or teaching the “channel region” and the “light shielding layer,” as claimed. As such, Applicants have not been fully informed as to how the cited references teach the claimed invention, as required. Moreover, without further information, Applicants have not been given an opportunity to rebut the allegations and conclusions in the instant Office action.

Regarding **independent Claims 1, 10 and 23** in the instant Office action at Pages 3 and 4, it is asserted that it would have been obvious to one skilled in the art at the time of the invention was made to combine the Kikkawa LCD panel into the Kim fingerprint terminal in order to obtain an LCD device having both a data display function and a fingerprint capture function.

In the Response to Arguments on Page 6 of the instant Office action, specifically in item a., it is noted that the Kim LC panel 3 is directly attached to the finger print reader 10, and then concluded that the combination of the Kim device and the Kikkawa panel would result in a display panel directly attached to the finger print reader as well. It is further asserted that the Kikkawa upper substrate would be a support (e.g., substrate) for the finger print reader as well, and then further concluded that the liquid crystal layer would be directly contacted to the fingerprint reader lower substrate (e.g., Kikkawa upper substrate). Item c. of the Response to Arguments on Page 6 further explains that the upper substrate (of Kikkawa) can be directly attached to the lower substrate of the fingerprint reader (of Kim), and it can be formed together for a compact display purposes. Applicants respectfully disagree with the assertions and the conclusions stated in the Response to Arguments of the instant Office action.

Amended independent **Claims 1, 10 and 23** similarly recite, *inter alia*:

“a first substrate including a plurality of unit cells and a first transparent electrode, each of the unit cells having i) a sensor thin film transistor for receiving a light reflected from a fingerprint to generate electric charges corresponding to an intensity of the reflected light, ii) a storage device for storing the electric charges, iii) a first switch thin film transistor for receiving the electric charges from the storage device to output the electric charges in response to an external control signal;

the first transparent electrode being disposed on a lower surface of the first substrate, *the first transparent electrode making contact with the lower surface of the first substrate, the lower surface opposing a surface including the unit cells*;

a second substrate including a pixel, the pixel having i) a second switch thin film transistor, ii) a data line electrically coupled with a first electrode of the second switch thin film transistor, iii) a gate line electrically coupled with a second electrode of the second switch thin film transistor, iv) a color filter layer formed on first portions of the gate line, the data line and the second switch thin film transistor, v) a second transparent electrode formed on the color filter layer and electrically coupled with a second portion of the first electrode; and

a liquid crystal layer interposed between the first and second substrates, wherein *the liquid crystal layer contacts the first transparent electrode disposed on the lower surface of the first substrate.*”

Firstly, **Kim** teaches a fingerprint reader 10 including a sensor thin film transistor 12, a switching thin film transistor 13, and an LCD display 3 which may include a TFT substrate having a pixel and opposite substrate facing the TFT substrate, such as taught in Kikkawa. (See, Figure 4 and page 4, lines 14-22.) The fingerprint reader 10 and the LCD panel are separate from each other. In the LCD display 3, a common electrode may be formed on the TFT substrate or the opposite substrate. That is, the common electrode in Kim is not disposed or formed on the fingerprint reader 10, but instead is directly formed on the display panel 3.

In contrast, the claimed invention includes a first substrate including a sensor TFT and a first transparent electrode, and a second substrate including a pixel, where the sensor TFT is disposed directly on a surface of the first substrate and the first transparent electrode is disposed on an opposite surface of the first substrate. Therefore, Kim *does not teach or suggest* a first substrate including a plurality of unit cells and a first transparent electrode, the first transparent electrode making contact with the lower surface of the first substrate, the lower surface opposing a surface including the unit cells, and the liquid crystal layer contacts the first transparent electrode disposed on the lower surface of the first substrate of amended independent Claims 1, 10 and 23.

**Kikkawa** teaches an LCD panel including opposite (upper) substrate 61 including opposite electrode 34, and a TFT (lower) substrate 60 including a thin film transistor 22/26/27 and pixel electrode 31. (See, Figure 3.) Since the opposite (upper) substrate 61 does not include a sensing transistor corresponding to a sensor TFT of the claimed invention, Kikkawa also *does not teach or suggest* a first substrate including a plurality of unit cells and a first transparent electrode, the first transparent electrode making contact with the lower surface of the first substrate, the lower surface opposing a surface including the unit cells, and the liquid crystal layer contacts the first transparent electrode disposed on the lower surface of the first substrate of amended independent Claims 1, 10 and 23, and does not remedy the deficiencies of Kim.

Secondly, referring to the structure in Figure 3 of Kikkawa cited in the rejection details, Kikkawa specifically teaches a liquid crystal layer 33 is held between a TFT substrate 60 including a first transparent substrate 21 and an opposite substrate 61 including a second transparent substrate 35. (See, Col. 3, line 66 – Col. 4, line 36 and Col. 8, lines 11-20, and

Figures 1 and 3.) Since the LCD 3 of Kim would include two substrates, and the fingerprint reader 10/11 would include one additional substrate, there would be a total of three substrates in the resulting combined structure of Kim and Kikkawa.

Additionally, since the rejection details state that *the upper substrate* (of Kikkawa) can be directly attached to *the lower substrate* of the fingerprint reader (of Kim), the rejection details concede that there would be three substrates if the LCD of Kikkawa were combined with the LC panel 3 of Kim.

Problems associated with this three substrate structure are described in the specification at page 2, line 18 to page 4, line 7 with reference to Figure 2 of the claimed invention. However, since the claimed invention integrates the sensor for sensing the fingerprint into the first substrate of the device, the total number of substrates is advantageously reduced to two, thereby simplifying the device. Since the combination of teachings of Kim and Kikkawa would lead one of ordinary skill in the art to include three substrates, contrary to the present invention as described, claimed and illustrated, there exists *no suggestion or motivation in the references or to one of ordinary skill in the art to modify or combine Kim and Kikkawa to teach a liquid crystal layer interposed between the first and second substrates, the liquid crystal layer contacting the first transparent electrode disposed on the lower surface of the first substrate* of Claims 1, 10 and 23.

Thirdly, item e. on Page 7 alleges the combination of Kim and Kikkawa *does disclose* and met the limitations of the claimed invention. [Emphasis added.] Applicants disagree with the conclusion in item e. of the Response to Arguments.

Since Kikkawa specifically teaches an LCD (for example, Figure 3) including a liquid crystal layer 33 is held between a TFT substrate 60 including a first transparent substrate 21 and an opposite substrate 61 including a second transparent substrate 35, if the fingerprint reader 10 including lower substrate 11 of Kim (for example, Figure 5) were then combined with the LCD of Kikkawa, the liquid crystal layer 33 would still only contact the (upper) second transparent substrate 35 of Kikkawa, not the lower substrate 11 (as the “first substrate”) of the fingerprint reader 10 of Kim. Therefore, merely combining the LC panel 3 of Kim with the LCD of Kikkawa *does not teach* the claimed invention, contrary to the conclusion in item e. of the Response to Arguments.

Fourthly, if the liquid crystal layer 33 of the combined structure including the LC panel 3 of Kim and the LCD of Kikkawa, were to contact a substrate of the “first substrate including a sensor thin film transistor and a first switch thin film transistor” as claimed, one would have to go beyond a mere combining of Kim and Kikkawa which results in a combined structure including three substrates where the liquid crystal layer 33 still only contacts the (upper) second transparent substrate 35 of Kikkawa. To achieve the liquid crystal layer 33 of Kikkawa contacting “a first substrate including a sensor thin film transistor and a first switch thin film transistor” as claimed, one would have to first combine the LC panel 3 of Kim and the LCD of Kikkawa, and then *further omit* one of the lower substrate of the fingerprint reader 10 of Kim or of the upper substrate of the LCD of Kikkawa.

Applicants find *no teaching, suggestion or motivation* in Kim and Kikkawa to omit either the lower substrate of the fingerprint reader 10 of Kim or of the upper substrate of the LCD of Kikkawa. Applicants further submit that neither Kim nor Kikkawa as a whole provide a reason for one of ordinary skill in the art to further modify Kim and Kikkawa by omitting one of the lower substrate of the fingerprint reader 10 of Kim or of the upper substrate of the LCD of Kikkawa, such that the liquid crystal layer 33 of Kikkawa contacts “a first substrate including a sensor thin film transistor and a first switch thin film transistor” as claimed. *In re Laskowski*, 871 F.2d 115, 117, 10 U.S.P.Q.2d 1397, 1398 (Fed. Cir. 1989) (“Although the Commissioner suggests that [the structure in the primary art reference] could readily be modified to form the [claimed] structure, [t]he mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification”) (citation omitted); *In re Stencel*, 828 F.2d 751, 755, 4 U.S.P.Q.2d 1071, 1073 (Fed. Cir. 1987) (obviousness cannot be established “by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion that the combination be made”).

Since there is *no teaching, suggestion or motivation* in Kim and Kikkawa to further modify the combined structure of Kim and Kikkawa to teach a liquid crystal layer interposed between the first and second substrates, the liquid crystal layer contacting the first transparent electrode disposed on the lower surface of the first substrate of Claims 1, 10 and 23, there exists *no suggestion or motivation* to one of ordinary skilled in the art to remove one of the lower substrate of the fingerprint reader 10 of Kim or of the upper substrate of the LCD of Kikkawa, to teach the claimed invention, and therefore the claimed invention is nonobvious.

Fifthly, as stated in the rejection details at Page 4, a motivation to combine Kim and Kikkawa would be to “obtain an LCD device having both a data display function and a fingerprint capture function.” Applicants respectfully note that a mere combining of Kim and Kikkawa, which results in a combined structure including three substrates, meets the stated motivation of “obtain an LCD device having both a data display function and a fingerprint capture function” in the rejection details. However, the combined structure meeting the above motivation still results in the liquid crystal layer 33 only contacting the (upper) second transparent substrate 35 of Kikkawa, not any portion of the fingerprint reader 10 of Kim, contrary to the claimed invention.

Another motivation is provided in item c. of the Response to Arguments on Page 6 of the instant Office action. Here, it is further stated that that the upper substrate (of Kikkawa) can be directly attached to the lower substrate of the fingerprint reader (of Kim), and it can be formed together *for a compact display purposes*.

As discussed above, a mere combining of Kim and Kikkawa results in a structure including three substrates where the liquid crystal layer 33 still only contacts the (upper) second transparent substrate 35 of Kikkawa. Applicants respectfully note that a mere combining of Kim and Kikkawa by directly attaching the upper substrate of Kikkawa to the lower substrate of the fingerprint reader of Kim, *does not meet* the stated motivation of “a compact display” in the Response to Arguments. Instead, to achieve a “more compact display” of the second motivation stated in the Response to Arguments, again, one would have to first combine the LC panel 3 of Kim and the LCD of Kikkawa, and then *further omit* one of the lower substrate of the fingerprint reader 10 of Kim or of the upper substrate of the LCD of Kikkawa.

Applicants again respectfully submit that there is *no teaching, suggestion or motivation* in Kim and Kikkawa to omit either the lower substrate of the fingerprint reader 10 of Kim or of the upper substrate of the LCD of Kikkawa, and neither Kim nor Kikkawa as a whole provide a reason for one of ordinary skill in the art to further modify Kim and Kikkawa by omitting one of the lower substrate of the fingerprint reader 10 of Kim or of the upper substrate of the LCD of Kikkawa as required such that the liquid crystal layer 33 of Kikkawa contacts “a first substrate including a sensor thin film transistor and a first switch thin film transistor” as claimed.

Since there is *no teaching, suggestion or motivation* in Kim and Kikkawa to further modify the combined structure of Kim and Kikkawa to teach a liquid crystal layer interposed

between the first and second substrates, the liquid crystal layer contacting the first transparent electrode disposed on the lower surface of the first substrate of Claims 1, 10 and 23, there exists *no suggestion or motivation* to one of ordinary skilled in the art to remove one of the lower substrate of the fingerprint reader 10 of Kim or of the upper substrate of the LCD of Kikkawa, to teach the claimed invention, and therefore the claimed invention is nonobvious.

Finally, Applicants respectfully submit that the Examiner has used an improper standard in arriving at the rejection of the above claims under section 103, based on improper hindsight, which fails to consider the totality of Applicant's invention and to the totality of the cited references, Kim and Kikkawa. More specifically the Examiner has used Applicant's disclosure to select portions of the cited references to allegedly arrive at Applicant's invention. In doing so, the Examiner has failed to consider the teachings of the references or Applicant's invention as a whole in contravention of section 103, including the disclosures of the references which teach contrary to Applicant's invention.

In applying Section 103, the U.S. Court of Appeals for the Federal Circuit has consistently held that one must consider both the invention and the prior art "as a whole", not from improper hindsight gained from consideration of the claimed invention. See, *Interconnect Planning Corp. v. Feil*, 227 U.S.P.Q. 543, 551 (Fed. Cir. 1985) and cases cited therein.

According to the *Interconnect* court :

"[n]ot only must the claimed invention as a whole be evaluated, but so also must the references as a whole, so that their teachings are applied in the context of their significance to a technician at the time - a technician without our knowledge of the solution. "

*Id.* Also critical to this Section 103 analysis is that understanding of "particular results" achieved by the invention. *Id.*

When, as here, the Section 103 rejection was based on selective combination of the prior art references to allegedly render a subsequent invention obvious, "there must be some reason for the combination other than the hind sight gleaned from the invention itself." *Id.* Stated in another way, "[i]t is impermissible to use the claimed invention as an instruction manual or 'template' to piece together the teachings of the prior art so that the claimed invention is rendered obvious." *In re Fritch* 23 U.S.P.Q.2d 1780, 1784 (Fed. Cir. 1992).



Considering the teaching of Kim and Kikkawa, combining the LC panel 3 of Kim and the LCD of Kikkawa results in a structure including three substrates where the liquid crystal layer 33 still only contacts the (upper) second transparent substrate 35 of Kikkawa. That is, the teachings of Kim and Kikkawa, and particular results of combining the LC panel 3 of Kim and the LCD of Kikkawa, are contrary to the claimed invention.

To achieve the liquid crystal layer 33 of Kikkawa contacting “a first substrate including a sensor thin film transistor and a first switch thin film transistor” as claimed, one would have to first combine the LC panel 3 of Kim and the LCD of Kikkawa, and then *further omit* one of the lower substrate of the fingerprint reader 10 of Kim or of the upper substrate of the LCD of Kikkawa. As there is *no teaching, suggestion or motivation* in Kim and Kikkawa to further modify the combined structure of Kim and Kikkawa to teach a liquid crystal layer interposed between the first and second substrates, the liquid crystal layer contacting the first transparent electrode disposed on the lower surface of the first substrate of Claims 1, 10 and 23, Applicants submit that the claimed invention has been used as an instruction manual or ‘template’ to piece together the teachings of Kim and Kikkawa, then to further modify the particular results outside of the teaching of Kim and Kikkawa, so that the claimed invention is rendered obvious. Therefore, the Examiner has used an improper standard in arriving at the rejection of the above claims under section 103, based on improper hindsight, which fails to consider the totality of Applicant’s invention and to the totality of the cited references, Kim and Kikkawa, and thus the rejection over Kim and Kikkawa is improper and should be withdrawn.

Thus, since the rejection details fail to point out with specificity what features in the cited references are being cited as corresponding to or teaching limitations of the claimed invention, since Kim and Kikkawa, alone or in combination, *fail to teach or suggest all of the limitations of* at least amended Claims 1, 10 and 23, since the combination of teachings of Kim and Kikkawa would lead one of ordinary skill in the art to include three substrates, contrary to the present invention as described, claimed and illustrated, since combining the LC panel 3 of Kim with the LCD of Kikkawa *does not teach* the claimed invention, contrary to the conclusion in item e. of the Response to Arguments, since there is *no teaching, suggestion or motivation* in Kim and Kikkawa to further modify the combined structure of Kim and Kikkawa to achieve the liquid crystal layer 33 of Kikkawa contacting “a first substrate including a sensor thin film transistor

and a first switch thin film transistor” as claimed, since the claimed invention has been used as an instruction manual or ‘template’ to piece together the teachings of Kim and Kikkawa, then to further modify the particular results outside of the teaching of Kim and Kikkawa to teach the claimed invention, and since the Examiner has used an improper standard in arriving at the rejection of the above claims under section 103, based on improper hindsight, which fails to consider the totality of Applicant’s invention and to the totality of the cited references, *prima facie* obviousness does not exist regarding at least Claims 1, 10 and 23 with respect to Kim and Kikkawa.

Applicants respectfully submit that Claims 1, 10 and 23 are not further rejected or objected and are therefore allowable. As Claims 3-9, 12-14 and 24-29 variously depend from Claims 1, 10 and 23, they are correspondingly allowable. Reconsideration, withdrawal of the relevant §103 rejections, and allowance of Claims 1-14 and 23-29 are respectfully requested.

### **Conclusion**

In view of the foregoing, it is respectfully submitted that the instant application is in condition for allowance. Accordingly, it is respectfully requested that this application be allowed and a Notice of Allowance issued. If the Examiner believes that a telephone conference with Applicants’ attorneys would be advantageous to the disposition of this case, the Examiner is cordially requested to telephone the undersigned.

Application No. 10/531,829  
Response dated: March 24, 2009  
Reply to Office action dated: February 6, 2009

Applicants hereby petition for any necessary extension of time required under 37 C.F.R. 1.136(a) or 1.136(b) which may be required for entry and consideration of the present Reply.

In the event the Commissioner of Patents and Trademarks deems additional fees to be due in connection with this application, Applicants' attorney hereby authorizes that such fee be charged to Deposit Account No. 06-1130.

Respectfully submitted,

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